

**Abstract 109**

**TITLE:** A Novel Mechanism of Oral Transmission of HIV by Infected Seminal Fluid and Milk

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**BACKGROUND:** Salivary transmission by the 30 million carriers is a rare event despite kissing, aerosolization, and dental treatment. The main salivary protective mechanism has been reported to be due to inactivation of the HIV-infected leukocytes in the mouth by the unique hypotonicity of saliva, resulting in a 10, 000-fold inhibition of HIV production. Unexplained is the successful oral transmission of HIV by seminal fluid and milk. We tested the hypothesis that isotonic seminal fluid and milk overcome the salivary hypotonic inactivation of HIV-transmitting leukocytes by (1) reconstituting the tonicity of saliva and (2)impeding physical mixing with saliva.

**METHODS:** Six samples of milk, three of colostrum, six of saliva, and three of seminal fluid were collected from normal donors. The 213 strain of HIV was propagated in human CEM lymphocytes or in peripheral blood mononuclear cells, treated with the various samples. The HIV production was then assayed in human MT-2 lymphocytes.

**RESULTS:** We found that hypotonic salivary inactivation of HIV-transmitting leukocytes was prevented by reconstitution of salivary salts by isotonic seminal fluid, milk, colostrum, blood or balanced salt solution. Also, physical mixing with saliva was impeded by seminal fluid and milk. The naturally deposited volumes of seminal fluid, milk and colostrum in the mouth were shown to be quantitatively sufficient to overcome the salivary protection.

**CONCLUSIONS:** These findings are consistent with the hypothesis that the successful oral transmission of HIV by seminal fluid, milk and colostrum may be due to their isotonicity, which overcomes hypotonic salivary inactivation of the transmitting leukocytes. Targeting the main mucosal transmitting mechanism, the HIV-infected cell, may allow adaptation of the oral defense to other mucosal sites (vaginal and rectal) as well as to reduce the risk to health care workers.

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